

### ABSTRACT

At least one engine operating parameter other than total fuel energy content is taken into account when transitioning between operating modes in a dual fuel or other multimode engine (20) in order to maintain a smooth transition between modes. The  
5 parameter preferably comprises at least one of primary fuel excess air ratio ( $\lambda$ ) and ignition timing and preferably is controlled in addition to total fuel energy content control.  $\lambda$  control is especially beneficial because it permits the control system to compensate for the engine's inability to substantially alter the instantaneous air mass in the combustion chamber during the transition period. For instance, during a transition  
10 from pilot ignited gaseous fuel mode to diesel mode, the controlled parameter preferably comprises diesel  $\lambda$ , and the controlling step comprises setting diesel  $\lambda$  at a relatively high value at the beginning of the transition period and thereafter reducing diesel  $\lambda$  during the transition period.